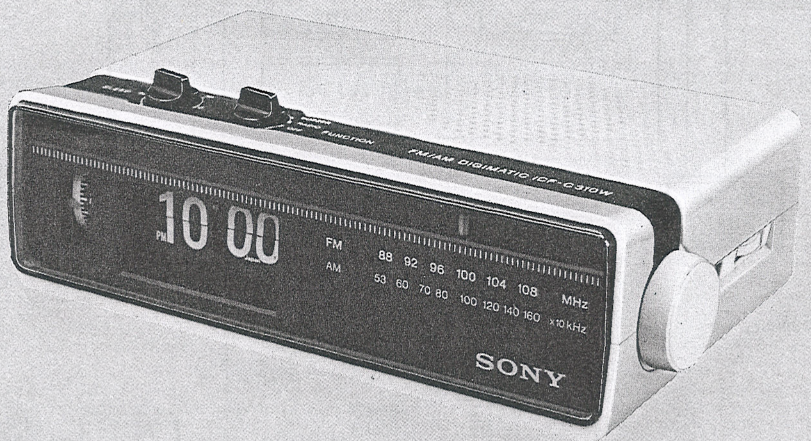
495

ICF-C310W

US Model


FM/AM DIGIMATIC ICF-C310W
FUNCTION
10 00
PM
FM
AM
88 92 96 100 104 108
MHz
53 60 70 80 100 120 140 160
x10 kHz
SONY

FM/AM DIGITAL CLOCK RADIO

SPECIFICATIONS

Antennas: FM: Lead-wire antenna
AM: Built-in ferrite-rod antenna

Frequency Range: FM: 87.5–108 MHz
AM: 530–1,605 kHz (566–187 m)

Power Requirements: 120 V ac, 60 Hz

Power Consumption: 5W

Power Output: 180 mW (with 10% harmonic distortion)

Speaker: Approx. 7.7 cm, 3 inches dia.

Dimensions: Approx. 240 (w) x 70 (h) x 160 (d) mm
9 1/2 (w) x 2 3/4 (h) x 6 3/8 (d) inches
including projecting parts and controls

Weight: Approx. 950 g, 2 lb 2 oz

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY SHADING AND ⚠ MARK ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

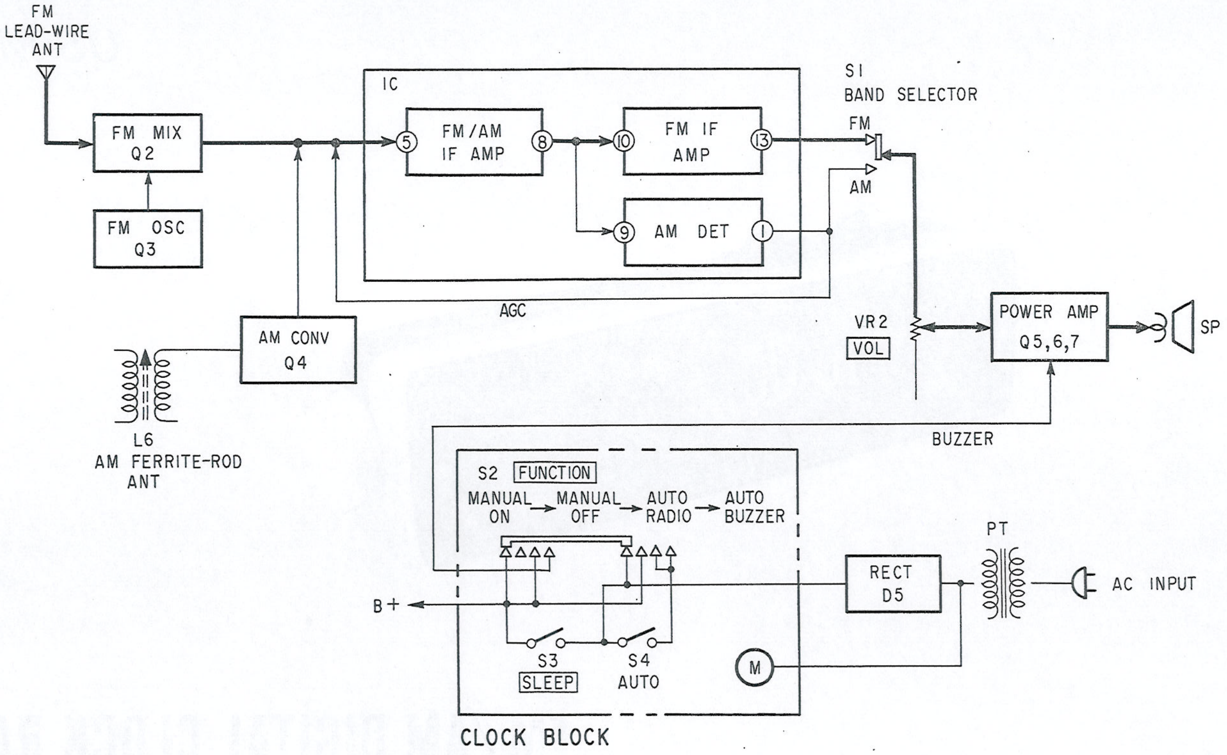
SONY®

SERVICE MANUAL

495

SECTION 1
OUTLINE

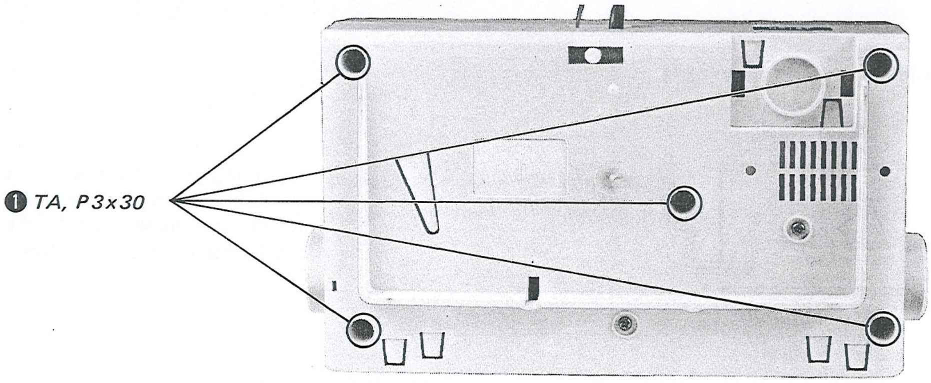
1-1. BLOCK DIAGRAM

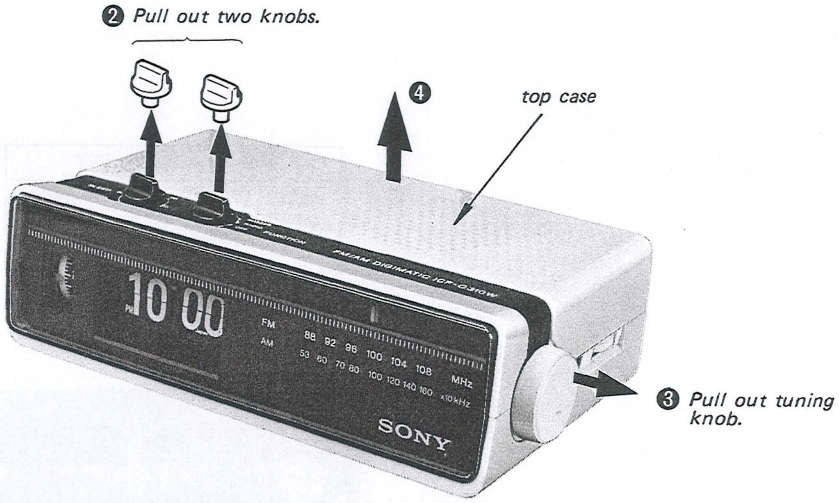

FM LEAD-WIRE ANT
FM MIX Q2
FM OSC Q3
IC
5
FM/AM IF AMP
8
10
FM IF AMP
13
9
AM DET
1
AGC
AM CONV Q4
L6 AM FERRITE-ROD ANT
S1 BAND SELECTOR
FM
AM
VR2 VOL
POWER AMP Q5,6,7
SP
BUZZER
S2 FUNCTION
MANUAL ON
MANUAL OFF
AUTO RADIO
AUTO BUZZER
B+
S3 SLEEP
S4 AUTO
M
RECT D5
PT
AC INPUT
CLOCK BLOCK

SECTION 2
DISASSEMBLY

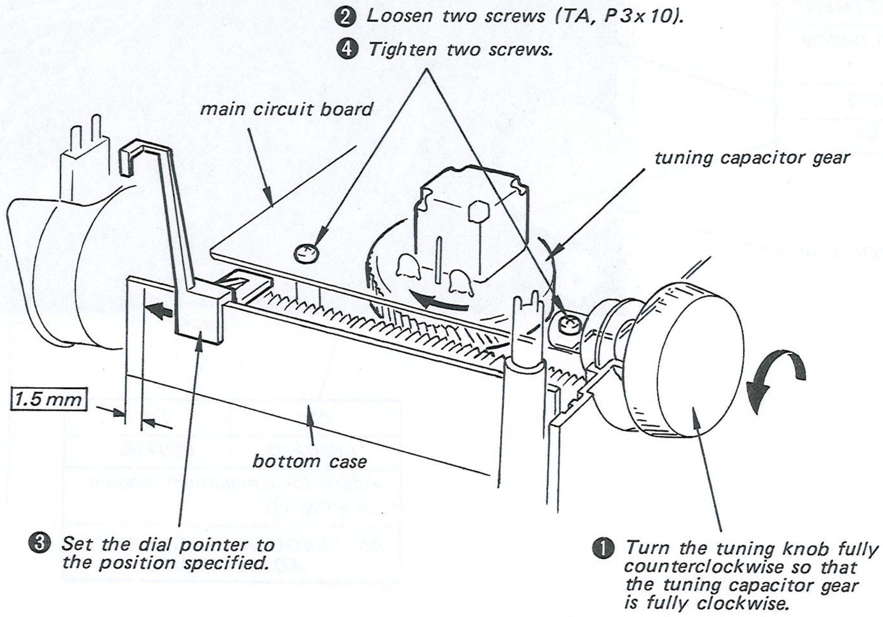
TOP CASE REMOVAL

- Remove the parts in the numerical order.




❷ Pull out two knobs.
❹
top case
❸ Pull out tuning knob.
10 00
FM/AM DIGIMATIC ICF-C310W
SONY

DIAL POINTER INSTALLATION


❷ Loosen two screws (TA, P3x10).
❹ Tighten two screws.
main circuit board
tuning capacitor gear
1.5 mm
bottom case
❸ Set the dial pointer to the position specified.
❶ Turn the tuning knob fully counterclockwise so that the tuning capacitor gear is fully clockwise.

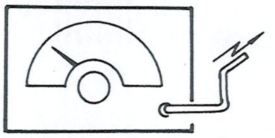
SECTION 3
ADJUSTMENTS

AM

Setting:

band selector switch: AM

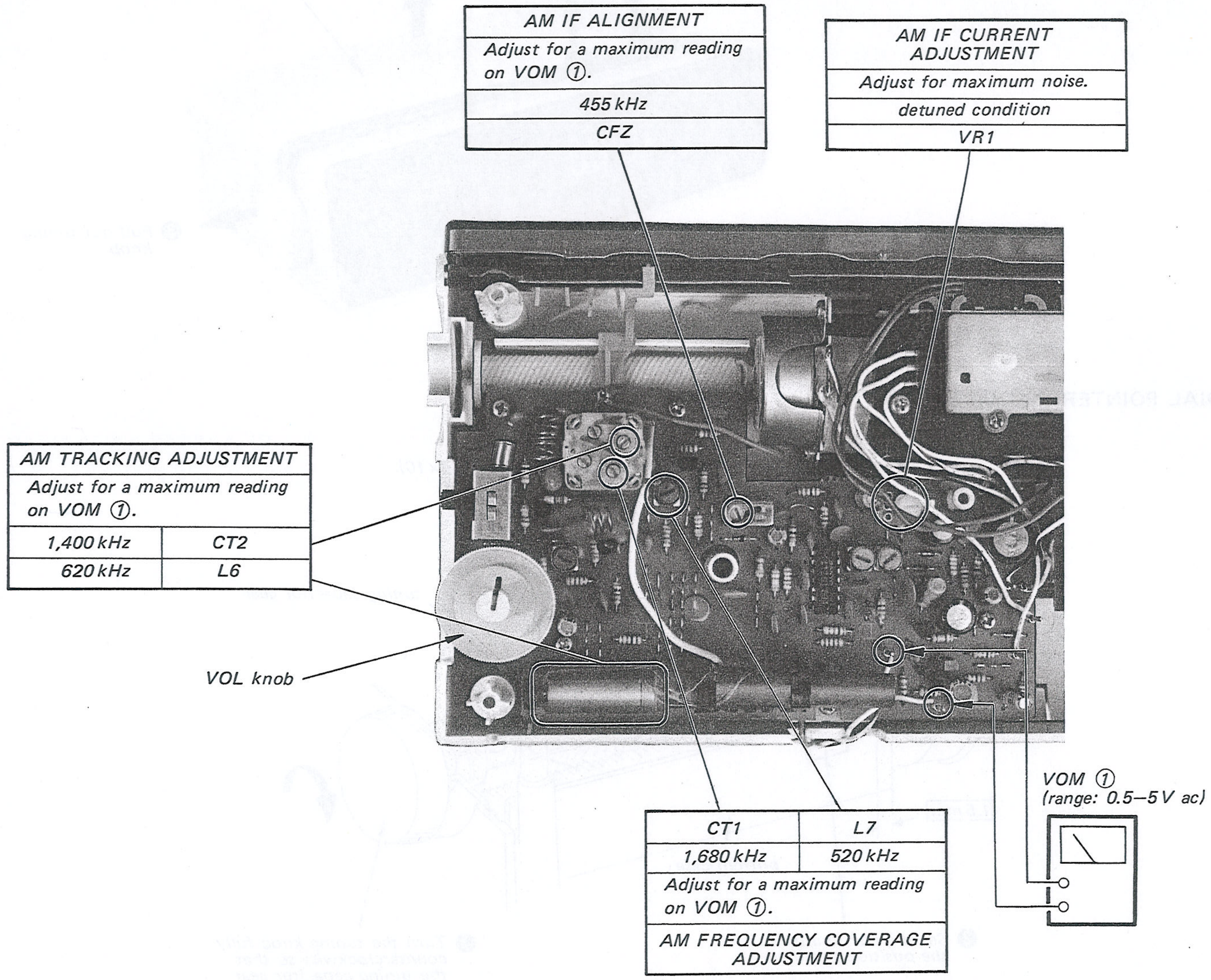
AM rf signal generator



Put the lead-wire antenna close to the set.

30 % amplitude modulation by 400 Hz signal

- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.



AM IF ALIGNMENT

Adjust for a maximum reading on VOM ①.

455 kHz	
CFZ	

AM IF CURRENT ADJUSTMENT

Adjust for maximum noise.

detuned condition	
VR1	

AM TRACKING ADJUSTMENT

Adjust for a maximum reading on VOM ①.

1,400 kHz	CT2
620 kHz	L6

CT1	L7
1,680 kHz	520 kHz

Adjust for a maximum reading on VOM ①.

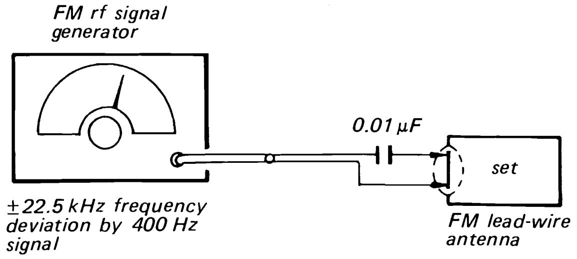
AM FREQUENCY COVERAGE ADJUSTMENT

VOM ① (range: 0.5–5 V ac)

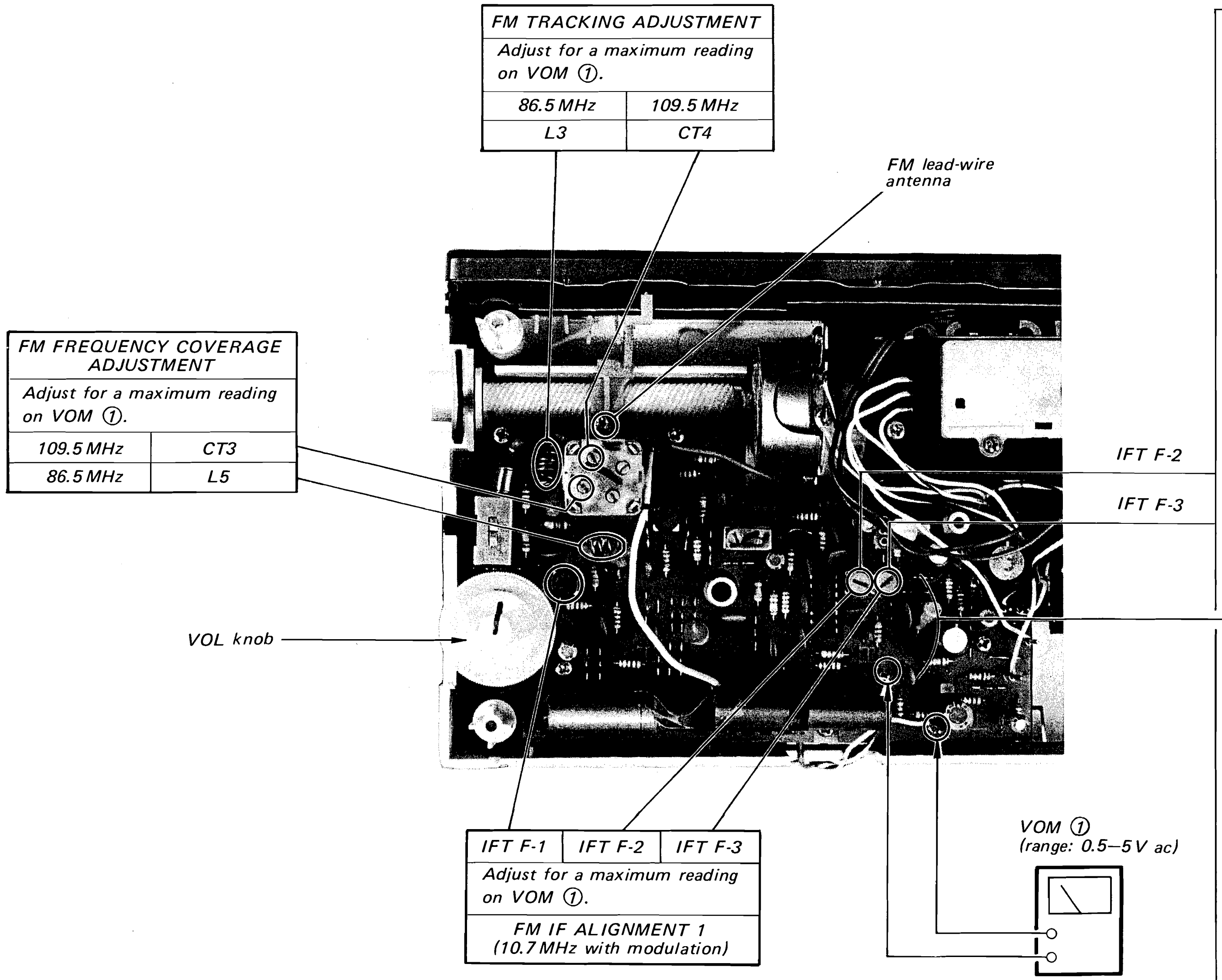
FM

Setting:

band selector switch: FM


FM rf signal generator
0.01 μF
set
±22.5 kHz frequency deviation by 400 Hz signal
FM lead-wire antenna

- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.


FM lead-wire antenna
IFT F-2
IFT F-3
VOL knob
VOM ①
(range: 0.5–5 V ac)

FM TRACKING ADJUSTMENT

Adjust for a maximum reading on VOM ①.

86.5 MHz	109.5 MHz
L3	CT4

FM FREQUENCY COVERAGE ADJUSTMENT

Adjust for a maximum reading on VOM ①.

109.5 MHz	CT3
86.5 MHz	L5

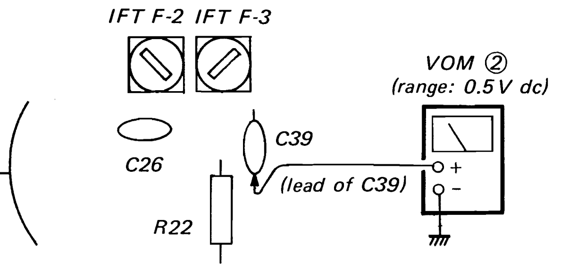
IFT F-1	IFT F-2	IFT F-3

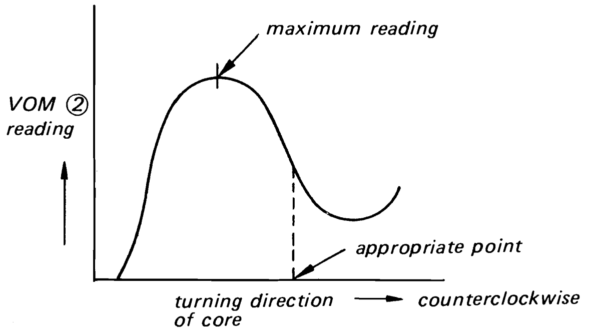
Adjust for a maximum reading on VOM ①.

FM IF ALIGNMENT 1
(10.7 MHz with modulation)

FM IF ALIGNMENT 2

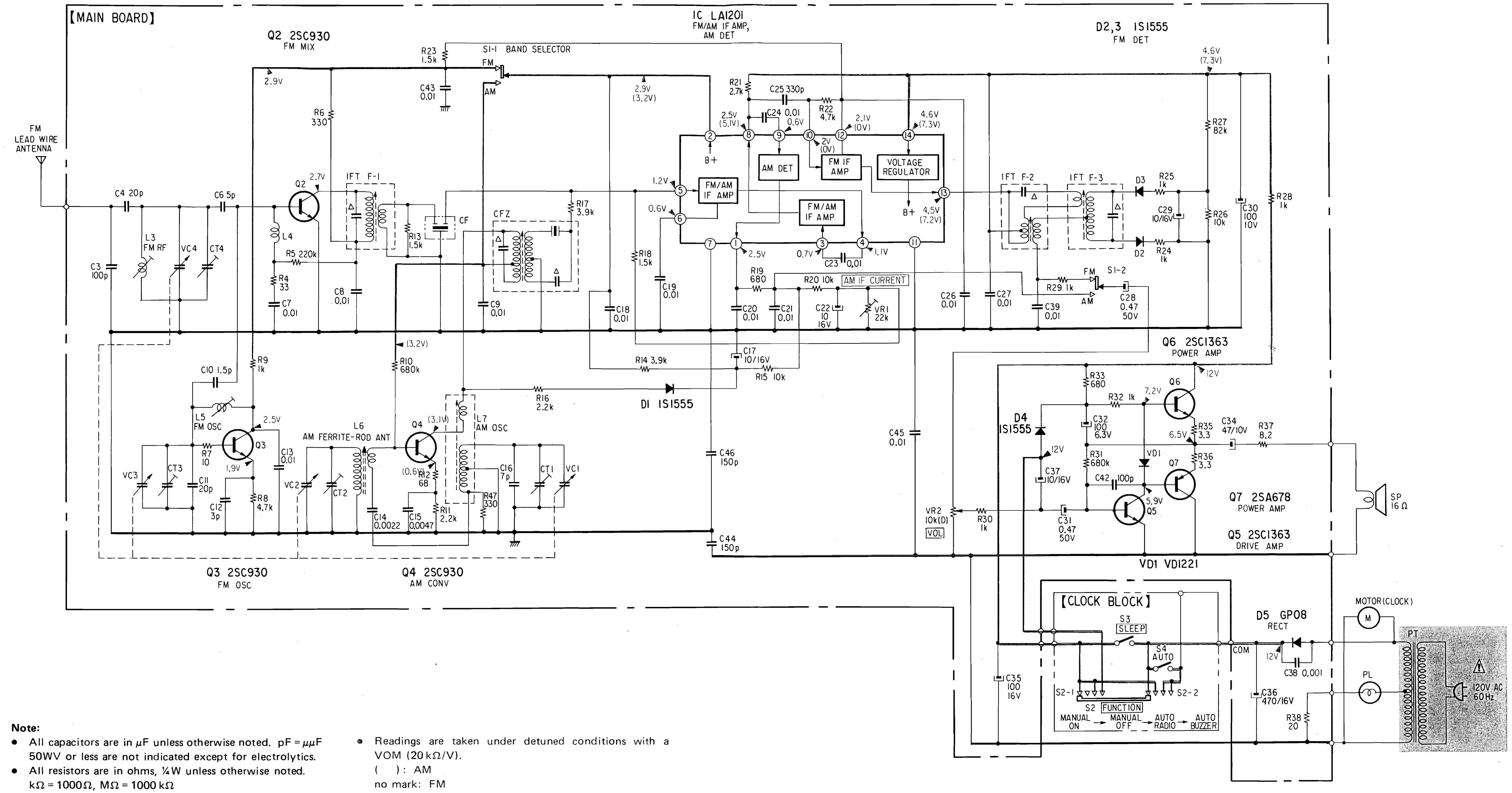
1. Check for the reading on VOM ② in detuned condition.
2. Adjust IFT F-2 for maximum noise in detuned condition.
3. Tune the set to the FM broadcasting signal.
4. Turn the core of IFT F-3 fully clockwise and carefully turn it counterclockwise, so that the VOM ② reading will go up to maximum and then start falling again. Adjust the core of IFT F-3 for the same level obtained in step 1 on the falling slope.


IFT F-2 IFT F-3
VOM ②
(range: 0.5 V dc)
C26
C39
(lead of C39)
R22
+
−



SECTION 4
DIAGRAMS

4-1. SCHEMATIC DIAGRAM


[MAIN BOARD]
IC LA1201
FM/AM IF AMP, AM DET
Q2 2SC930
FM MIX
D2,3 1S1555
FM DET
S1-1 BAND SELECTOR
FM
AM
FM LEAD WIRE ANTENNA
R23 1.5k
C43 0.01
R6 330
2.9V
2.9V (3.2V)
R21 2.7k
C25 330p
C24 0.01
R22 4.7k
2.5V (5.1V)
0.6V
2.1V (0V)
2V (0V)
4.6V (7.3V)
B+
AM DET
FM IF AMP
VOLTAGE REGULATOR
FM/AM IF AMP
1.2V
0.6V
4.5V (7.2V)
IFT F-1
IFT F-2
IFT F-3
CF
CFZ
R17 3.9k
R13 1.5k
C4 20p
C6 5p
L3 FM RF
VC4
CT4
C3 100p
L4
R5 220k
R4 33
C7 0.01
C8 0.01
C9 0.01
R18 1.5k
C18 0.01
C19 0.01
2.5V
0.7V
1.1V
C23 0.01
R19 680
R20 10k
AM IF CURRENT
C20 0.01
C21 0.01
C22 10 16V
VR1 22k
C26 0.01
C27 0.01
C39 0.01
R29 1k
FM S1-2
AM
C28 0.47 50V
D3
R25 1k
C29 10/16V
D2
R24 1k
R26 10k
R27 82k
C30 100 10V
R28 1k
4.6V (7.3V)
(3.2V)
R10 680k
C17 10/16V
R14 3.9k
R15 10k
R16 2.2k
D1 1S1555
C10 1.5p
R9 1k
L5 FM OSC
R7 10
2.5V
1.9V
Q3
C13 0.01
VC3
CT3
C11 20p
C12 3p
R8 4.7k
L6
AM FERRITE-ROD ANT
Q4
(3.1V)
(0.6V)
R12 68
L7 AM OSC
VC2
CT2
C14 0.0022
C15 0.0047
R11 2.2k
R47 330
C16 7p
CT1
VC1
C46 150p
C44 150p
C45 0.01
Q3 2SC930
FM OSC
Q4 2SC930
AM CONV
Q6 2SC1363
POWER AMP
12V
R33 680
R32 1k
7.2V
Q6
D4 1S1555
C32 100 6.3V
6.5V
R35 3.3
C34 47/10V
R37 8.2
12V
R31 680k
VD1
R36 3.3
C37 10/16V
C42 100p
Q7
5.9V
Q5
VR2 10k(D)
VOL
R30 1k
C31 0.47 50V
Q7 2SA678
POWER AMP
Q5 2SC1363
DRIVE AMP
VD1 VD1221
SP 16Ω
[CLOCK BLOCK]
S3 SLEEP
S4 AUTO
S2-1
S2-2
S2 FUNCTION
MANUAL ON
MANUAL OFF
AUTO RADIO
AUTO BUZZER
C35 100 16V
COM
D5 GP08
RECT
12V
C38 0.001
C36 470/16V
R38 20
MOTOR (CLOCK)
M
PL
PT
120V AC 60Hz

Note:

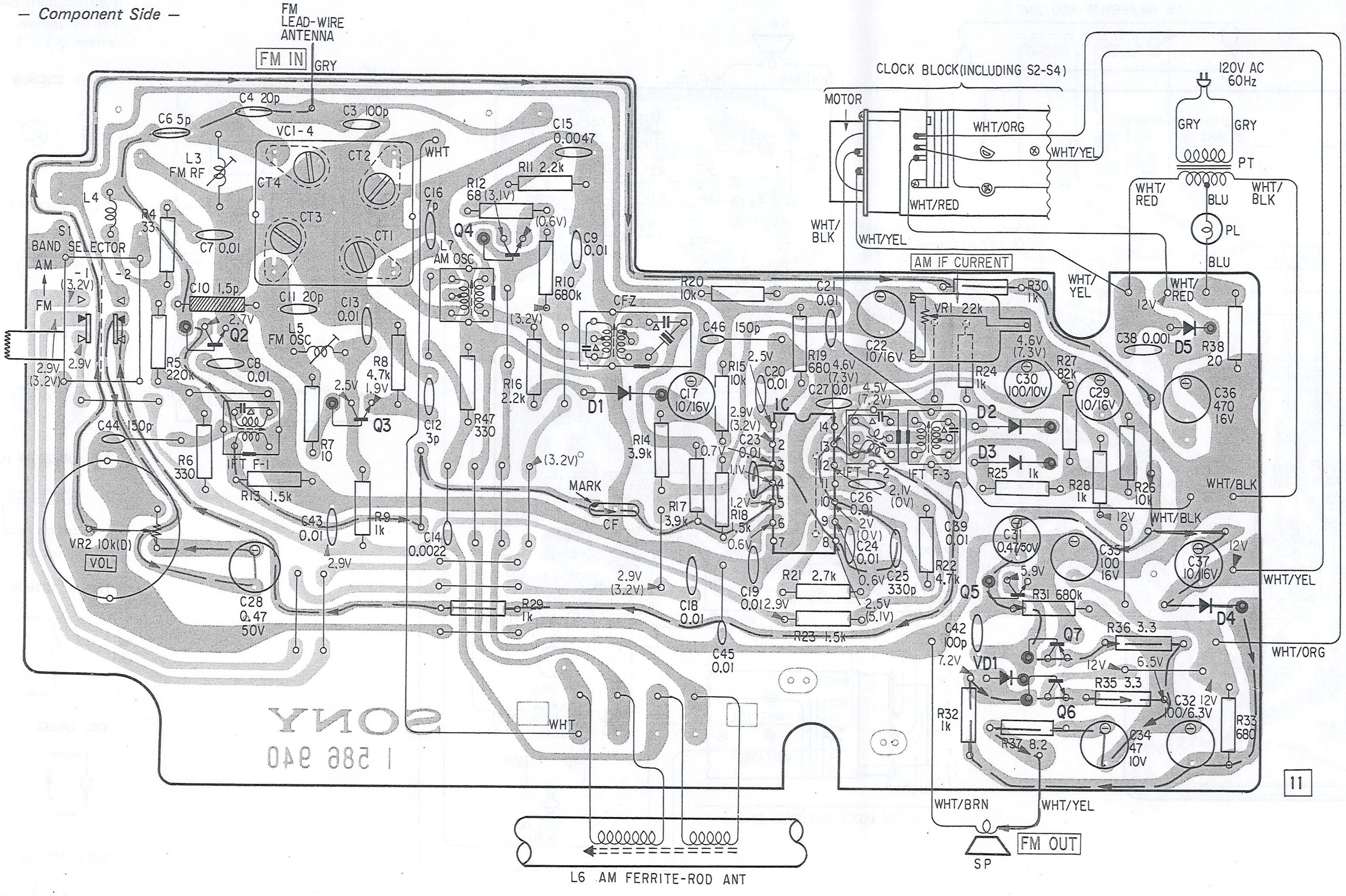
- All capacitors are in μF unless otherwise noted. pF = μμF 50WV or less are not indicated except for electrolytics.
- All resistors are in ohms, ¼W unless otherwise noted. kΩ = 1000Ω, MΩ = 1000 kΩ
- △: internal component.
- ▬▬ : B+ bus.
- ▭ : panel designation.
- ▭ : adjustment for repair.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under detuned conditions with a VOM (20 kΩ/V).
  ( ) : AM
  no mark: FM
- Voltage variations may be noted due to normal production tolerances.
- Switch

Ref. No.	Switch	Position
S1-1, 2	BAND SELECTOR	FM
S2	FUNCTION	MANUAL ON
S3	SLEEP	OFF
S4	AUTO	OFF

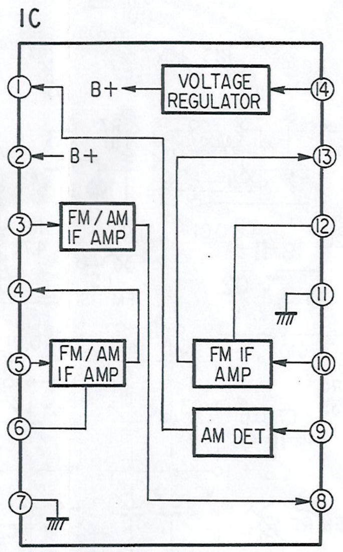
Note: The components identified by shading and ⚠ mark are critical for safety. Replace only with part number specified.

4-2. MOUNTING DIAGRAM

— Component Side —


FM LEAD-WIRE ANTENNA
FM IN
GRY
C4 20p
C6 5p
C3 100p
VC1-4
C15 0.0047
L3 FM RF
CT4
CT2
CT3
CT1
WHT
R11 2.2k
R12 68(3.1V)
C16 7p
Q4
(0.6V)
C9 0.01
L4
R4 33
S1 BAND SELECTOR
AM
FM
-1
-2
(3.2V)
C7 0.01
L7 AM OSC
R10 680k
C10 1.5p
2.7V
Q2
C11 20p
C13 0.01
L5 FM OSC
(3.2V)
CFZ
2.9V (3.2V)
2.9V
R5 220k
C8 0.01
R8 4.7k
2.5V
1.9V
Q3
R16 2.2k
C46 150p
R20 10k
C21 0.01
D1
C44 150p
R7 10
C12 3p
R47 330
R15 10k
2.5V
C20 0.01
R19 680
4.6V (7.3V)
C27 0.01
C17 10/16V
IC
R6 330
IFT F-1
R13 1.5k
(3.2V)
MARK
CF
R14 3.9k
0.7V
C23 0.01
2.9V (3.2V)
1.1V
IFT F-2
IFT F-3
VR2 10k(D)
VOL
C43 0.01
R9 1k
2.9V
C14 0.0022
R17 3.9k
1.2V
R18 1.5k
0.6V
C26 0.01
2.1V (0V)
2V (0V)
C24 0.01
C28 0.47 50V
R29 1k
2.9V (3.2V)
C18 0.01
C19 0.012.9V
R21 2.7k
0.6V
C25 330p
2.5V (5.1V)
R23 1.5k
C45 0.01
SONY
1 586 940
WHT
L6 AM FERRITE-ROD ANT
CLOCK BLOCK(INCLUDING S2-S4)
MOTOR
WHT/ORG
WHT/YEL
WHT/RED
WHT/BLK
WHT/YEL
120V AC 60Hz
GRY
GRY
PT
WHT/RED
BLU
WHT/BLK
PL
BLU
AM IF CURRENT
R30 1k
VR1 22k
WHT/YEL
WHT/RED
12V
C38 0.001
D5
R38 20
C22 10/16V
4.5V (7.2V)
R24 1k
C30 100/10V
R27 82k
C29 10/16V
C36 470 16V
D2
D3
R25 1k
R28 1k
R26 10k
WHT/BLK
12V
WHT/BLK
C39 0.01
C31 0.47/50V
C35 100 16V
C37 10/16V
12V
R22 4.7k
5.9V
Q5
R31 680k
WHT/YEL
D4
C42 100p
Q7
R36 3.3
WHT/ORG
7.2V
VD1
12V
6.5V
R35 3.3
C32 12V 100/6.3V
R32 1k
Q6
C34 47 10V
R33 680
R37 8.2
11
WHT/BRN
WHT/YEL
SP
FM OUT

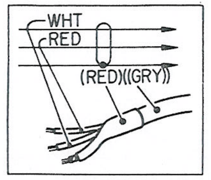
Q IC	2	3	4		IC	5	7 6		
D				1		2 VD1 3		5	4


IC
B+
VOLTAGE REGULATOR
B+
FM / AM IF AMP
FM / AM IF AMP
FM IF AMP
AM DET
1
2
3
4
5
6
7
8
9
10
11
12
13
14

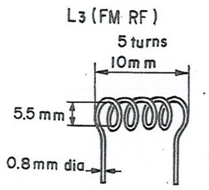
Note:

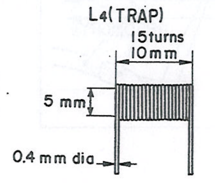
- ⬚ : indicates side identified with part number.
- ▨ B+ pattern.
- ⇒ : FM signal path.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under detuned conditions with a VOM (20 kΩ/V).
  ( ) : AM
  no mark: FM

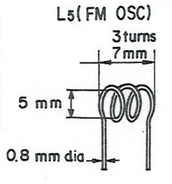
- Color code of sleeving over the end of the jacket.


WHT
RED
(RED)(GRY)

- Replacement part for the coils (L3, L4 and L5) is not supplied.
  If necessary, make a coil as follows.


L3 (FM RF)
5 turns
10mm
5.5 mm
0.8mm dia.


L4 (TRAP)
15 turns
10mm
5 mm
0.4 mm dia.


L5 (FM OSC)
3 turns
7mm
5 mm
0.8 mm dia.

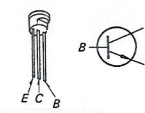
Servicing Note:

- The leads of all transistors, diodes and electrolytic capacitors are arranged in the same direction on this circuit board.

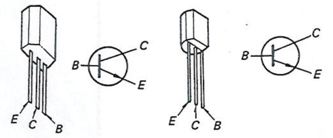
Replacement Semiconductors

For replacement, use semiconductors except in ( ).

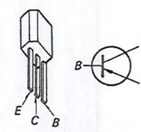
Q2–4: 2SC930



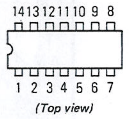
Q5, 6: 2SC634A (2SC1363)


E C B
B
C
E
E C B
B
C
E

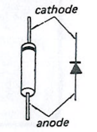
Q7: 2SA678



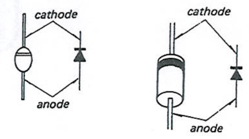
IC: LA1201W (LA1201)


14 13 12 11 10 9 8
1 2 3 4 5 6 7
(Top view)

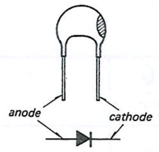
D1–4: 1S1555


cathode
anode

D5: U05G (GP08)

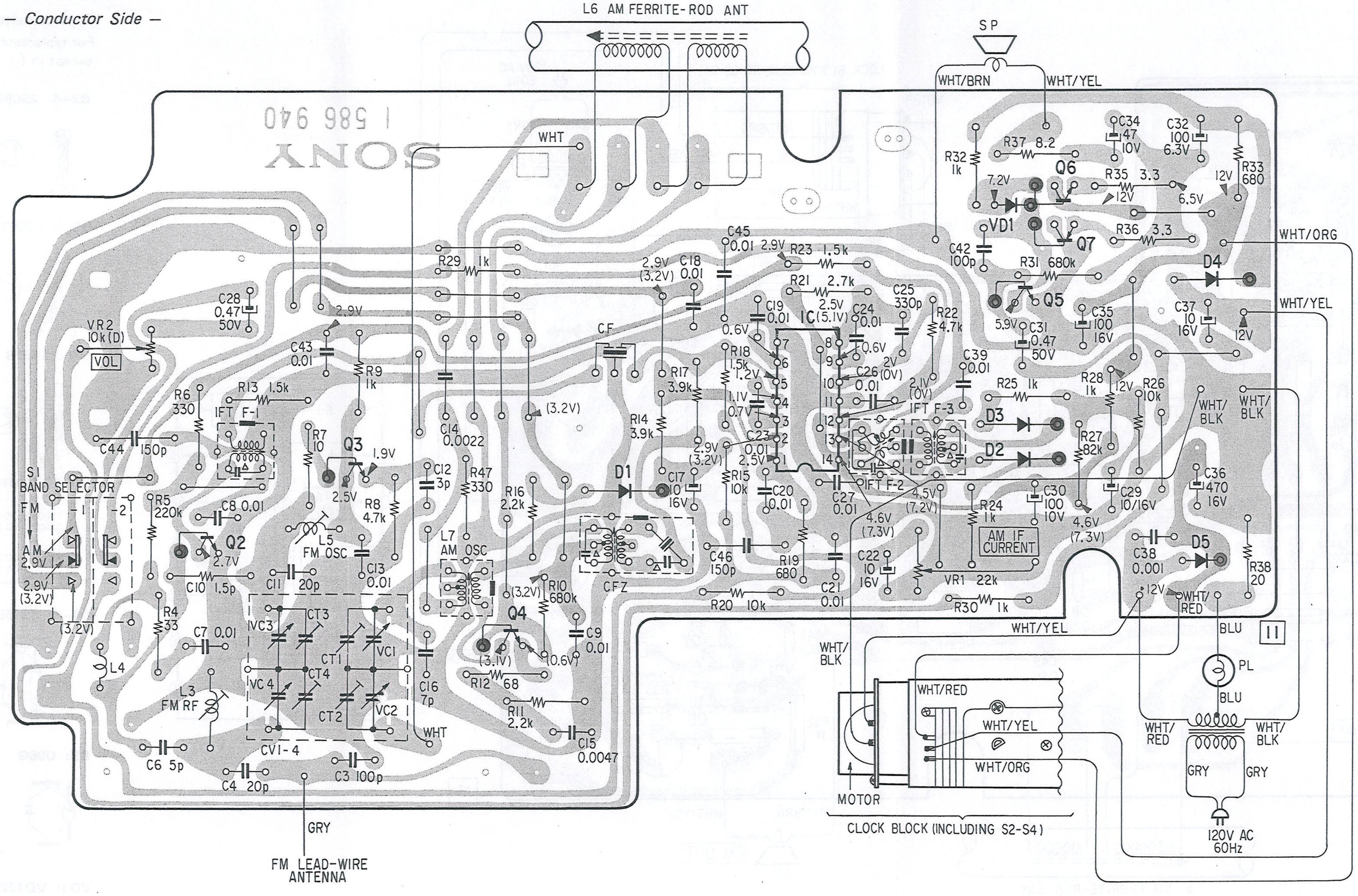

cathode
anode
cathode
anode

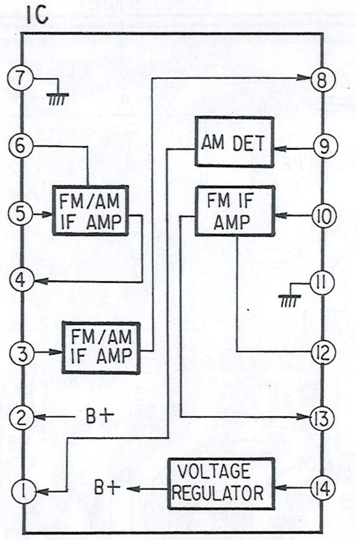
VD1: VD1221


anode
cathode

4-3. MOUNTING DIAGRAM

— Conductor Side —

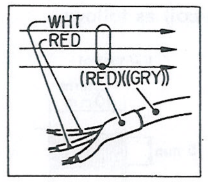

L6 AM FERRITE-ROD ANT
1 586 940
SONY
WHT
SP
WHT/BRN
WHT/YEL
R32 1k
R37 8.2
C34 47 10V
C32 100 6.3V
R33 680
12V
7.2V
Q6
R35 3.3
12V
6.5V
VD1
Q7
R36 3.3
WHT/ORG
C45 0.01
2.9V
R23 1.5k
C42 100p
R31 680k
D4
R29 1k
2.9V (3.2V)
C18 0.01
R21 2.7k
C25 330p
R22 4.7k
Q5
C35 100 16V
C37 10 16V
WHT/YEL
12V
C28 0.47 50V
2.9V
C19 0.01
2.5V
IC (5.1V)
C24 0.01
0.6V
5.9V
C31 0.47 50V
VR2 10k(D)
VOL
C43 0.01
CF
0.6V
2V (0V)
C39 0.01
R9 1k
R18 1.5k
C26 0.01
2.1V (0V)
R6 330
R13 1.5k
R17 3.9k
1.2V
1.1V
0.7V
IFT F-3
R25 1k
R28 1k
12V
R26 10k
WHT/BLK
WHT/BLK
IFT F-1
(3.2V)
R7 10
Q3
1.9V
C14 0.0022
R14 3.9k
C23 0.01
D3
C44 150p
2.9V (3.2V)
2.5V
R27 82k
S1 BAND SELECTOR
FM
AM
C12 3p
R47 330
D1
R15 10k
D2
C36 470 16V
2.5V
R8 4.7k
R16 2.2k
C17 10 16V
C20 0.01
IFT F-2
4.5V (7.2V)
C30 100 10V
C29 10/16V
R5 220k
C8 0.01
L5 FM OSC
L7 AM OSC
C27 0.01
R24 1k
4.6V (7.3V)
4.6V (7.3V)
Q2
2.7V
2.9V
2.9V (3.2V)
AM IF CURRENT
C38 0.001
D5
C10 1.5p
C11 20p
C13 0.01
C46 150p
C22 10 16V
R19 680
VR1 22k
R38 20
(3.2V)
R4 33
C7 0.01
CT3
VC3
VC1
CT1
CT4
VC4
CT2
VC2
CV1-4
(3.2V)
R10 680k
CFZ
Q4
(3.1V)
(0.6V)
C9 0.01
R20 10k
C21 0.01
R30 1k
12V
WHT/RED
WHT/YEL
BLU
L4
L3 FM RF
R12 68
C16 7p
R11 2.2k
WHT
C15 0.0047
WHT/BLK
WHT/RED
WHT/YEL
WHT/ORG
PL
BLU
WHT/RED
WHT/BLK
GRY
GRY
C6 5p
C4 20p
C3 100p
MOTOR
CLOCK BLOCK (INCLUDING S2-S4)
120V AC 60Hz
GRY
FM LEAD-WIRE ANTENNA
11


IC
7
6
5
4
3
2
1
FM/AM IF AMP
FM/AM IF AMP
B+
B+
AM DET
FM IF AMP
VOLTAGE REGULATOR
8
9
10
11
12
13
14

Q · IC	2	3	4		IC		5	6 7	
D				1		VD1	3 2		4 5

Note:

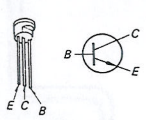
- [!]→ : indicates side identified with part number.
- ▨ : B+ pattern.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under detuned conditions with a VOM (20 kΩ/V).
  ( ) : AM
  no mark: FM
- Color code of sleeving over the end of the jacket.


WHT
RED
(RED)(GRY)

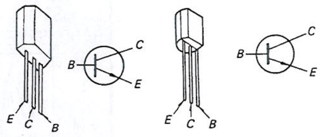
Replacement Semiconductors

For replacement, use semiconductors except in ( ).

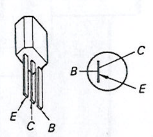
Q2–4: 2SC930



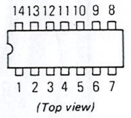
Q5, 6: 2SC634A (2SC1363)


E C B
B
C
E
E C B
B
C
E

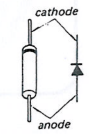
Q7: 2SA678



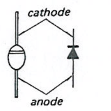
IC: LA1201W (LA1201)

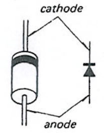

14 13 12 11 10 9 8
1 2 3 4 5 6 7
(Top view)

D1–4: 1S1555

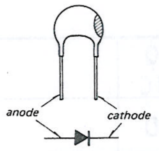

cathode
anode

D5: U05G (GP08)

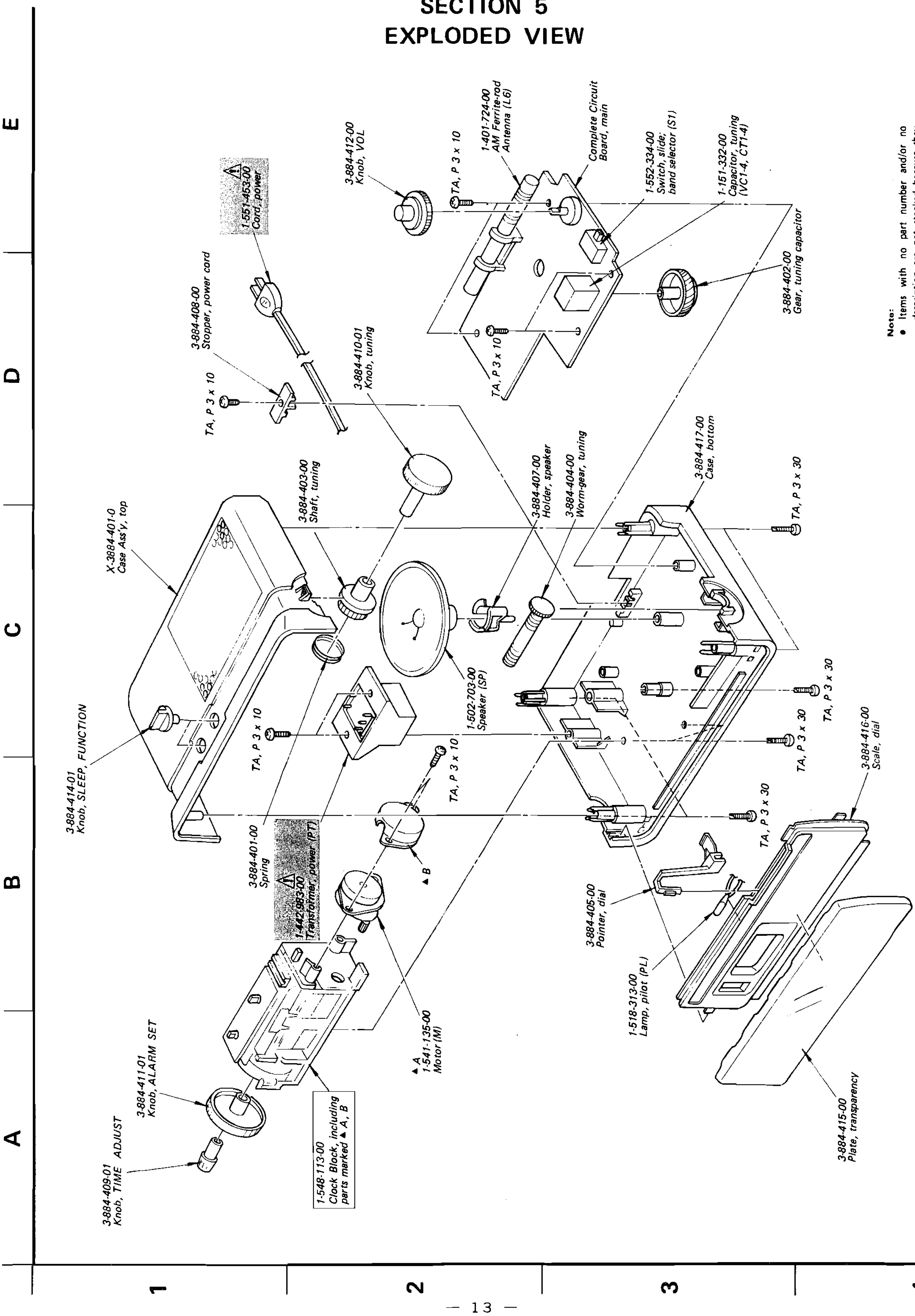

cathode
anode


cathode
anode

VD1: VD1221


anode
cathode

SECTION 5
EXPLODED VIEW


A
B
C
D
E
1
2
3
4
3-884-409-01 Knob, TIME ADJUST
3-884-411-01 Knob, ALARM SET
1-548-113-00 Clock Block, including parts marked ▲ A, B
▲ A 1-541-135-00 Motor (M)
▲ B
3-884-414-01 Knob, SLEEP, FUNCTION
3-884-401-00 Spring
⚠ 1-442-983-00 Transformer, power (PT)
X-3884-401-0 Case Ass'y, top
TA, P 3 x 10
TA, P 3 x 10
3-884-403-00 Shaft, tuning
1-502-703-00 Speaker (SP)
3-884-410-01 Knob, tuning
TA, P 3 x 10
3-884-408-00 Stopper, power cord
⚠ 1-551-463-00 Cord, power
3-884-412-00 Knob, VOL
TA, P 3 x 10
1-401-724-00 AM Ferrite-rod Antenna (L6)
Complete Circuit Board, main
1-552-334-00 Switch, slide; band selector (S1)
1-151-332-00 Capacitor, tuning (VC1-4, CT1-4)
3-884-402-00 Gear, tuning capacitor
TA, P 3 x 10
3-884-407-00 Holder, speaker
3-884-404-00 Worm-gear, tuning
3-884-417-00 Case, bottom
TA, P 3 x 30
TA, P 3 x 30
TA, P 3 x 30
TA, P 3 x 30
3-884-405-00 Pointer, dial
1-518-313-00 Lamp, pilot (PL)
3-884-416-00 Scale, dial
3-884-415-00 Plate, transparency

Note:
- Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (−) = slotted head

Note: The components identified by shading and ⚠ mark are critical for safety. Replace only with part number specified.

SECTION 6
ELECTRICAL PARTS LIST

SEMICONDUCTORS

Transistors

Ref. No.	Part No.	Description
Q2–4		2SC930
⇒ Q5,6		2SC634A
Q7		2SA678

IC

Ref. No.	Part No.	Description
⇒ IC		LA1201W

Diodes

Ref. No.	Part No.	Description
D1–4		1S1555
⇒ D5		U05G
VD1		VD1221

COILS

Ref. No.	Part No.	Description
L6	1-401-724-00	AM Ferrite-rod Antenna
L7	1-405-685-00	AM Osc

TRANSFORMERS

Ref. No.	Part No.	Description
CFZ	1-403-163-00	AM IFT
IFT F-1	1-403-872-00	FM IFT
IFT F-2	1-403-959-00	FM Discriminator
IFT F-3	1-403-953-00	FM Discriminator

CAPACITORS

All capacitors are in μF and ceramic unless otherwise noted.
50WV or less are not indicated except for electrolytics. pF = μμF, elect = electrolytic

Ref. No.	Part No.	Description		
C3	1-102-975-11	100p		
C4	1-102-958-11	20p		
C6	1-102-942-11	5p		
C7–9	1-101-923-11	0.01		
C10	1-161-249-11	1.5p		
C11	1-101-981-11	20p		
C12	1-101-940-11	3p		
C13	1-161-032-11	0.01		
C14	1-101-919-11	0.0022		
C15	1-101-922-11	0.0047		
C16	1-102-944-11	7p		
C17	1-121-651-11	10	16V	elect
C18,19	1-101-923-11	0.01		
C20,21	1-161-032-11	0.01		
C22	1-121-651-11	10	16V	elect
C23,24	1-101-923-11	0.01		
C25	1-102-832-11	330p		
C26,27	1-101-923-11	0.01		
C28	1-121-726-11	0.47	50V	elect
C29	1-121-651-11	10	16V	elect
C30	1-121-414-11	100	10V	elect
C31	1-121-726-11	0.47	50V	elect
C32	1-121-413-11	100	6.3V	elect
C34	1-121-352-11	47	10V	elect
C35	1-121-415-11	100	16V	elect
C36	1-121-426-11	470	16V	elect
C37	1-121-651-11	10	16V	elect
C38	1-102-074-11	0.001		
C39	1-161-034-11	0.01		
C42	1-102-975-11	100p		
C43	1-101-923-11	0.01		
C44	1-161-313-11	150p		
C45	1-161-330-11	0.01		
C46	1-161-313-11	150p		
CT1–4 VC1–4	1-151-332-00	Tuning		

- ⇒: Due to standardization, interchangeable replacements may be substituted for parts specified in the diagrams.

RESISTORS

All resistors are in ohms. Common ¼W carbon resistors are omitted.
Refer to the list on the last page for their part numbers.

Ref. No.	*Part No.*	*Description*
VR1	1-224-646-XX	22 k, adjustable; AM IF current
VR2	1-226-183-00	10 k, variable; VOL

SWITCHES

Ref. No.	*Part No.*	*Description*
S1	1-552-334-00	Slide, band selector
S2–4		Included in clock block

MISCELLANEOUS

Ref. No.	*Part No.*	*Description*
CF	1-527-184-XX	Filter, ceramic; 10.7 MHz
M	1-541-135-00	Motor (included in clock block)
PL	1-518-313-00	Lamp, pilot; 5 V, 60 mA
PT	⚠ 1-442-983-00	Transformer, power
SP	1-502-703-00	Speaker
	1-548-113-00	Clock Block
	⚠ 1-551-453-00	Cord, power

ACCESSORIES & PACKING MATERIALS

Part No.	*Description*
3-884-420-00	Carton
3-884-421-00	Cushion
3-884-422-00	Sheet, protection
3-995-805-21	Manual, instruction

Note: The components identified by shading and ⚠ mark are critical for safety. Replace only with part number specified.

1/4 WATT CARBON RESISTORS

Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.
1.0	1-244-601-11	10	1-244-625-11	100	1-244-649-11	1.0k	1-244-673-11	10k	1-244-697-11	100k	1-244-721-11	1.0M	1-244-745-11
1.1	1-244-602-11	11	1-244-626-11	110	1-244-650-11	1.1k	1-244-674-11	11k	1-244-698-11	110k	1-244-722-11	1.1M	1-244-746-11
1.2	1-244-603-11	12	1-244-627-11	120	1-244-651-11	1.2k	1-244-675-11	12k	1-244-699-11	120k	1-244-723-11	1.2M	1-244-747-11
1.3	1-244-604-11	13	1-244-628-11	130	1-244-652-11	1.3k	1-244-676-11	13k	1-244-700-11	130k	1-244-724-11	1.3M	1-244-748-11
1.5	1-244-605-11	15	1-244-629-11	150	1-244-653-11	1.5k	1-244-677-11	15k	1-244-701-11	150k	1-244-725-11	1.5M	1-244-749-11
1.6	1-244-606-11	16	1-244-630-11	160	1-244-654-11	1.6k	1-244-678-11	16k	1-244-702-11	160k	1-244-726-11	1.6M	1-244-750-11
1.8	1-244-607-11	18	1-244-631-11	180	1-244-655-11	1.8k	1-244-679-11	18k	1-244-703-11	180k	1-244-737-11	1.8M	1-244-751-11
2.0	1-244-608-11	20	1-244-632-11	200	1-244-656-11	2.0k	1-244-680-11	20k	1-244-704-11	200k	1-244-728-11	2.0M	1-244-752-11
2.2	1-244-609-11	22	1-244-633-11	220	1-244-657-11	2.2k	1-244-681-11	22k	1-244-705-11	220k	1-244-729-11	2.2M	1-244-753-11
2.4	1-244-610-11	24	1-244-634-11	240	1-244-658-11	2.4k	1-244-682-11	24k	1-244-706-11	240k	1-244-730-11	2.4M	1-244-754-11
2.7	1-244-611-11	27	1-244-635-11	270	1-244-659-11	2.7k	1-244-683-11	27k	1-244-707-11	270k	1-244-731-11	2.7M	1-244-755-11
3.0	1-244-612-11	30	1-244-636-11	300	1-244-660-11	3.0k	1-244-684-11	30k	1-244-708-11	300k	1-244-732-11	3.0M	1-244-756-11
3.3	1-244-613-11	33	1-244-637-11	330	1-244-661-11	3.3k	1-244-685-11	33k	1-244-709-11	330k	1-244-733-11	3.3M	1-244-757-11
3.6	1-244-614-11	36	1-244-638-11	360	1-244-662-11	3.6k	1-244-686-11	36k	1-244-710-11	360k	1-244-734-11	3.6M	1-244-758-11
3.9	1-244-615-11	39	1-244-639-11	390	1-244-663-11	3.9k	1-244-687-11	39k	1-244-711-11	390k	1-244-735-11	3.9M	1-244-759-11
4.3	1-244-616-11	43	1-244-640-11	430	1-244-664-11	4.3k	1-244-688-11	43k	1-244-712-11	430k	1-244-736-11	4.3M	1-244-760-11
4.7	1-244-617-11	47	1-244-641-11	470	1-244-665-11	4.7k	1-244-689-11	47k	1-244-713-11	470k	1-244-737-11	4.7M	1-244-761-11
5.1	1-244-618-11	51	1-244-642-11	510	1-244-666-11	5.1k	1-244-690-11	51k	1-244-714-11	510k	1-244-738-11	5.1M	1-244-762-11
5.6	1-244-619-11	56	1-244-643-11	560	1-244-667-11	5.6k	1-244-691-11	56k	1-244-715-11	560k	1-244-739-11		
6.2	1-244-620-11	62	1-244-644-11	620	1-244-668-11	6.2k	1-244-692-11	62k	1-244-716-11	620k	1-244-740-11		
6.8	1-244-621-11	68	1-244-645-11	680	1-244-669-11	6.8k	1-244-693-11	68k	1-244-717-11	680k	1-244-741-11		
7.5	1-244-622-11	75	1-244-646-11	750	1-244-670-11	7.5k	1-244-694-11	75k	1-244-718-11	750k	1-244-742-11		
8.2	1-244-623-11	82	1-244-647-11	820	1-244-671-11	8.2k	1-244-695-11	82k	1-244-719-11	820k	1-244-743-11		
9.1	1-244-624-11	91	1-244-648-11	910	1-244-672-11	9.1k	1-244-696-11	91k	1-244-720-11	910k	1-244-744-11		

HARDWARE NOMENCLATURE

Screw:

– P 3 x 10

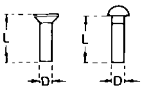
L: Length in mm

D: Diameter in mm

Type of head

Indicated slotted-head only.

Unless otherwise indicated, it means
cross-recessed head (Phillips type).



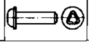
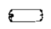
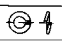
Reference Designation	Shape	Description	Remarks
		SCREWS	
P		pan-head screw	binding-head (B) screw for replacement
PWH		pan-head screw with washer face	binding-head (B) screw and flat washer for replacement
PS PSP		pan-head screw with spring washer	binding-head (B) screw and spring washer for replacement
PSW PSPW		pan-head screw with spring and flat washers	binding-head (B) screw and spring and flat washers for replacement
R		round-head screw	binding-head (B) screw for replacement
K		flat-countersunk-head screw	
RK		oval-countersunk-head screw	
B		binding-head screw	
T		truss-head screw	binding-head (B) screw for replacement
F		flat-fillister-head screw	
RF		fillister-head screw	
BV		braizer-head screw	

Nut, Washer, Retaining ring:

N 3

Diameter of usable screw or shaft

Reference designation

Reference Designation	Shape	Description	Remarks
		SELF-TAPPING SCREWS	
TA		self-tapping screw	ex: TA, P 3 x 10
PTP		pan-head self-tapping screw	binding-head self-tapping (TA, B) screw for replacement
PTPWH		pan-head self-tapping screw with washer face	binding-head self tapping (TA, B) screw and flat washer for replacement
PTTWH		pan-head thread-rolling screw with washer face	binding-head (B) screw and flat washer for replacement
		SET SCREWS	
SC		set screw	
SC		hexagon-socket set screw	ex: SC 2.6 x 4, hexagon socket
		NUT	
N		nut	
		WASHERS	
W		flat washer	
SW		spring washer	
LW		internal-tooth lock washer	ex: LW3, internal
LW		external-tooth lock washer	ex: LW3, external
		RETAINING RINGS	
E		retaining ring	
G		grip-type retaining ring	

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78B0630-1
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